

REMARKS

Claims 1-20 are pending in the present application. In the Office Action mailed June 21, 2006, the Examiner rejected claims 10, 11, 15, and 16 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner next rejected claims 1-6, 8, 10, and 12-18 under 35 U.S.C. §102(b) as being anticipated by Miyazaki et al. (USP 6,320,377). Claims 7, 9, 19, and 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Miyazaki et al. as applied to claim 1 above, and further in view of Hajnal (USP 6,380,736).

Claim 1 has been amended to correct a clerical error. The second clause now recites “the user-selected imaging parameters” rather than “the user-related imaging parameters.”

In setting forth the rejection of claims 10, 11, 15, and 16 under 35 U.S.C. § 112, the Examiner correctly noted that the claims recite inversion pulses with angles of less than 180 degrees, but then asserted that “to cause an inversion recovery a 180 [degree] pulse has to be applied.” *Office Action*, 06/21/06, p. 2. The Examiner stated that the claim was therefore indefinite because it was unclear to the Examiner “as to whether the angle is to be 180 (an inversion pulse) or less than 180 as claimed.” *Id.*

The language of claims 10 and 15 is not indefinite. Claim 10 plainly recites that “a first inversion pulse has a flip angle less than 180°” and claim 15 plainly recites “a first inversion pulse having a flip angle less than 180°.” The Examiner’s statement regarding a supposed requirement that inversion pulses must have angles of 180 degrees is not in accord with the features or lexicography of the present invention as set forth in the application nor supported by any evidence. Applicant directs the Examiner’s attention to paragraphs 25 and 26 of the application for a discussion of the use of inversion pulses with angles less than 180 degrees for driving suppressed tissue magnetization immediately to a steady-state condition. In light of the specification, one of ordinary skill in the art would not be confused as to what angles the recited pulse may have. Upon a better understanding of this feature of the present invention, the Examiner will appreciate that a rejection of claims 10, 11, 15, and 16 under § 112 as being indefinite is improper. As such, Applicant requests withdrawal of this rejection.

With respect to the rejection of claims 1-6, 8, 13, 17, and 18, under § 102, the Examiner stated that “it is obvious that the length of the train of saturation pulses [in Miyazaki et al.] must be determined on the fly” because the types of tissues present in a region of interest vary. *Office Action*, 06/21/06, p. 3 (emphasis added). For a proper rejection to be asserted under § 102, the Examiner must show that each and every limitation of the claimed invention is taught expressly

or inherently in the cited reference. MPEP § 2131. Stating that it is “obvious” that a claimed feature “must be” present in a reference finds no place in a § 102 rejection. It is unclear to Applicant whether the Examiner is attempting to assert inherency of the reference, or whether the Examiner is actually applying a one-reference § 103 rejection. In order for Applicant to have a fair opportunity to respond to the rejection of these claims, Applicant requests clarification of exactly which rejection the Examiner is applying.

In regard to claim 1 in particular, the Examiner indicated that Miyazaki et al. teaches all elements thereof. In doing so, the Examiner stated that “the length of the train of saturation pulses must be determined on the fly.” *Office Action*, 06/21/06, p. 3. First, claim 1 does not call for setting the length of a train of saturation pulses, but a train of alpha pulses of a gradient echo (GE) sequence for acquisition of MR data. One of skill in the art will appreciate that saturation pulses are not the same as alpha pulses. All embodiments of Miyazaki et al. have a saturation pre-sequence, SQ_{pre}, which is applied to a pre-saturated slice A_{sat}, different than the slice being imaged A_{ima}. Col. 7, ll. 35-39; col. 9, ll. 23-27; col. 9, l. 66 to col. 10 l. 4; col. 11, ll. 10-16; col. 11, ll. 60-63; col. 14, ll. 7-9. The acquisition sequences, SQ_{acq}, of the embodiments described in Miyazaki et al. are described as predetermined, standard acquisition sequences such as the FLAIR, fast FLAIR, PASTA, etc. sequences. Col. 6, ll. 30-33, 54-59. Miyazaki et al. does not address the content or make-up of the acquisition pulse sequences, let alone any manner by which they could be set “specific to the user-selected imaging parameters,” as claimed. Therefore, Miyazaki et al. does not teach or suggest all elements of claim 1. As such, Application believes that claim 1, and the claims that depend therefrom, are patentably distinct over the art of record.

Similarly, claim 8 calls for a computer programmed to, “from the time interval, determine a number of alpha pulses to be applied after each inversion pulse of a gradient echo pulse sequence.” (Emphasis added). As discussed above, Miyazaki et al. does not teach or suggest varying the number of alpha pulses in a GE pulse sequence for data acquisition.

Furthermore, Miyazaki et al. does not teach the element of claim 8 reciting that a “time interval for longitudinal magnetization of the tissue to recover to the null point” is determined, despite the Examiner’s unsupported assertion to the contrary. *Office Action*, 06/21/06, p. 3. The Examiner stated that “[t]he computer, on[c]e it determines the types of tissues that are involved and need to be suppressed, can determine the null point of the tissue, the T1 times for the tissues, and the optimal number of RF pulses.” *Id.* However, this rejection finds no support whatsoever in the text of Miyazaki et al. It merely recites a set of possibilities, none of which are specifically or inherently taught in Miyazaki et al. The fact that a computer could perform certain tasks does

not correlate to any specific teaching or suggestion of the claimed elements. Accordingly, without specific support in the art of record, the Examiner's rejection should be withdrawn.

Claim 17 also calls for the number of alpha pulses of an acquisition sequence to be determined. As Applicant has shown above with respect to claims 1 and 8, Miyazaki et al. does not teach determination of a number of alpha pulses, let alone such a determination done "on-the-fly." The acquisition sequences of Miyazaki et al. are standard, and predetermined. Col. 6, ll. 30-33, 54-59.

Claim 15 was also rejected under § 102 as being anticipated by Miyazaki et al., but the Examiner did not consider express limitations of the claim. The Examiner considered the "first inversion pulse having a flip angle less than 180°" of claim 15 to be "180 degrees, and cannot be less than 180." *Office Action*, 06/21/06, p. 3. However, the Examiner has not provided any evidence or reasoning to support why an inversion pulse cannot be less than 180 degrees. As Applicant explained above with respect to the rejection under § 112, the present application specifically details embodiments in which initial inversion pulses have flip angles less than 180 degrees. Since the first inversion pulse can have a flip angle less than 180 degrees, Miyazaki et al. does not show that each and every element of claim 15 is present in the art of record. Accordingly, claim 15 and the claim depending therefrom are patentably distinct from the art of record.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-20. Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

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